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| 10/791,233 | 03/02/2004 | Patrick Kappler | FR-AM1933 NP | 3627 |
| 31684 | 7590 | 04/01/2005 | | EXAMINER |
| ARKEMA INC. | | | | HU, HENRY S |
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| PHILADELPHIA, PA 19103-3222 | | | 1713 | |

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|--------------------------------------|---------------------------------------|
| Office Action Summary | Application No. 10/791,233 | Applicant(s) KAPPLER ET AL. |
| | Examiner Henry S. Hu | Art Unit 1713 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
 If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
 If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
 Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on election of February 23, 2005.
 2a) This action is **FINAL**. 2b) This action is non-final.
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-11 is/are pending in the application.
 4a) Of the above claim(s) 1-6 is/are withdrawn from consideration.
 5) Claim(s) _____ is/are allowed.
 6) Claim(s) 7-11 is/are rejected.
 7) Claim(s) 7 and 10 is/are objected to.
 8) Claim(s) 1-11 are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.
 10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

| | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>3-2-2004</u> . | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____. 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6) <input type="checkbox"/> Other: _____. |
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DETAILED ACTION

1. This Office Action is in response to the faxed Election and Amendment filed on February 23, 2005. The Applicants are reminded to send a certified copy of priority paper of "FR 03.02532" for this application. Otherwise, priority date of March 3, 2003 is not granted.

2. **Applicant's election of Group III, Claims 7-11 is traversed with remarks on page 1.** The traversal is on the ground(s) that it would not place an undue burden to search and examine the non-elected Group I (Claims 1-5) and Group II (Claim 6) with the elected Group III since they are so closely related in the field of PVDF polymers. This is not found persuasive because each of Group I and Group II is drawn to a technology apparently requiring search in different classification area. In the instant case Group I was drawn to a general process of making polyvinylidene fluoride (PVDF) homo- or co-polymer, Group II was drawn to a different process of making polyvinylidene fluoride (PVDF) homo- or co-polymer with specific steps in a batchwise or semi-continuous process, while Group III was drawn to a polyvinylidene fluoride (PVDF) homo- or co-polymer comprising sodium acetate, a potassium alkylsulphonate, with chain ends of $-CF_2-CH_2-O-SO_3^-$ and optionally a surface-active additive.

As discussed earlier, process Groups II and I are actually producing two different PVDF polymers due to the presence or absence of other process steps or additive components. Each fundamental step in Group II requires having substep(s) along with other additive

components. With such a sophisticated process in Group II, the PVDF polymer obtained will behave quite different from that of Group I.

Group III relates to a specific polyvinylidene fluoride (PVDF) homo- or co-polymer, while each of **inventions II and I** is related to a process or a methodology. Such a specific polymer disclosed in Invention III may become one option of the polymers produced from Group I or II. Additionally, different type of chain end is obtained by using different component or step. Therefore, the scope of the claims, i.e., the metes and boundaries are distinct.

The requirement is still deemed proper and is therefore made FINAL. In summary, this application contains original **Claims 1-6**, which is drawn to an invention non-elected with traverse. A complete reply to the final rejection must include **cancellation of non-elected claims** or other appropriate action (37 CFR 1.144) See MPEP § 821.01. **Claims 1-11 are pending now**, while the nonelected **Claims 1-6** are withdrawn from consideration. An action follows.

Claim Objections

3. Claims 7 and 10 are objected to because of the following informalities:

(a) On **Claim 7** at lines 2-6, the sentence of “optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: $-CF_2-CH_2-O-SO_3^-$ originating from the use of the persulphate as initiator” may be improper. Rewriting is needed. Otherwise, all the

limitations on potassium alkylsulphonate, surface-active additive and chain ends may become optional. Please refer to the limitations of other parent Claim 1.

(b) On **Claim 10** at line 2, recitation of "methyl- sulphonate" should be changed to "methylsulphonate" to be consistent with the same wording used for analogue on lines 2-3.

Double Patenting

4. A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ... may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Claims 7-11 are provisionally rejected under 35 U.S.C. 101 as claiming the same invention as that of claims 7-11 of copending Application No. **10/791,226**, now **USPG-PUB 2004/0225095 A1 to Kappler et al.** (with priority date 3-3-2003). This is a provisional double patenting rejection since the conflicting claims have not in fact been patented.

5. **Parent Claim 7 and its dependent Claims 8-11** of present invention relate to a polyvinylidene fluoride (PVDF) homopolymer or copolymer comprising sodium acetate,

optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: $-\text{CF}_2\text{-CH}_2\text{-O-SO}_3^-$ originating from the use of the persulphate as initiator.

In a close examination, **Claims 7-11** in copending Application No. **10/791,226**, now **USPG-PUB 2004/0225095 A1 to Kappler et al.**, relate to a process for making a PVDF homopolymer or copolymer. In a close examination, Claims 7-11 are exactly the same as **Claims 7-11** of present invention.

6. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 7-11 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claims 1-6 of copending Application No. **10/791,226**, now **USPG-PUB 2004/0225095 A1 to Kappler et al.** (with priority date 3-3-2003).

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented. Although the conflicting claims are not identical, they are not patentably distinct from each other because the subject matter claimed in the instant

application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter, as follows:

7. **Parent Claim 7 and its dependent Claims 8-11** of present invention relate to a polyvinylidene fluoride (PVDF) homopolymer or copolymer comprising sodium acetate, optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: $-\text{CF}_2\text{-CH}_2\text{-O-SO}_3^-$ originating from the use of the persulphate as initiator.

In a close examination, **Claims 1-6** in copending Application No. 10/791,226, now **USPG-PUB 2004/0225095 A1 to Kappler et al.**, relate to a process for making a PVDF homopolymer or copolymer. Although the process may involve some substeps or use different sequence somewhat different from the process used to make PVDF polymers of current application, they are using fundamentally the same components in the process. Therefore, such obtained PVDF homo polymer or copolymer would always contain some sodium acetate. It is noted that the sentence of “optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: $-\text{CF}_2\text{-CH}_2\text{-O-SO}_3^-$ originating from the use of the persulphate as initiator” rendering all the limitations on potassium alkylsulphonate, surface-active additive and chain ends being in optional use.

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

9. *The limitation of parent Claim 7 in present invention relates to polyvinylidene fluoride (PVDF) homopolymer or copolymer comprising sodium acetate, optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: -CF₂-CH₂-O-SO₃⁻ originating from the use of the persulphate as initiator. See other limitations of dependent Claims 8-11.*

10. Claims 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Blaise et al. (US 4,025,709).

Regarding the limitation of parent Claim 7, Blaise et al. disclose a process for the emulsion polymerization or copolymerization of vinylidene fluoride in the presence of (A) potassium persulfate (free radical initiator), (B) a fluorinated emulsifier, (C) sodium acetate and (D) paraffin (column 1, line 65 – column 2, line 1; column 2, line 40-43).

Such obtained PVDF homo polymer or copolymer would always contain some sodium acetate, Blaise therefore anticipates the limitation of Claim 7 since the sentence of “optionally a potassium alkylsulphonate, less than 300 ppm of surface-active additive and chain ends: -CF₂-

CH₂-O-SO₃⁻ originating from the use of the persulphate as initiator" rendering all the limitations on potassium alkylsulphonate, surface-active additive and chain ends being in optional use.

11. Regarding **Claim 8**, the claimed fluorinated surfactant having a formula of R_f-COOSO₃H is included in Examples 1-3 (column 3, line 17). Specifically, perfluorooctanoic acid is used.

Regarding **Claim 9**, such obtained PVDF homopolymer or copolymer would only carry some sodium acetate in a residual amount after work up the polymerization product. The residual amount is less than 0.11 grams per process accordingly (column 2, line 42).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blaise et al. (US 4,025,709) in view of Sharma et al. (US 6,462,109 B1).

Regarding the limitation of parent **Claim 7**, Blaise et al. disclose a process for the emulsion **polymerization or copolymerization of vinylidene fluoride** in the presence of (A) **potassium persulfate** (free radical initiator), (B) a fluorinated emulsifier, (C) **sodium acetate** and (D) paraffin (column 1, line 65 – column 2, line 1; column 2, line 40-43).

The Blaise reference is silent about “**less than 300 ppm of surface-active additive**” on the PVDF polymers. Sharma et al. teach that in the course of making various types of vinyl-containing polymers, a surfactantless polymer latex can be prepared by using **a sulfo-polyester stabilizer** (column 5, line 30-54; column 11, line 22-39; column 12; column 8, line 50 – column 9, line 22). By doing so, **a more durable and lasting coating composition may result since no surfactant is used** (column 12, line 29-32).

In light of the fact that polymers produced by all the involved references are containing similar type of vinyl-containing monomers, which can be obtained through free radical induced emulsion polymerization and the like. Therefore, one having ordinary skill in the art would have found it obvious to **modify Blasie's polymerization process by replacing the traditional surfactant with a sulfo-polyester stabilizer** as taught by Sharma. One would expect one

advantage is to obtain a final PVDF latex product without the presence of any surfactant. A **more durable and lasting coating composition may be thereby resulted.**

14. Regarding **Claim 8**, the claimed fluorinated surfactant having a formula of $R_F\text{-COOSO}_3\text{H}$ is included in Examples 1-3 (column 3, line 17). Specifically, perfluorooctanoic acid is used.

Regarding **Claim 9**, such obtained PVDF homopolymer or copolymer would only carry some sodium acetate in a residual amount after work up the polymerization product. The residual amount is less than 0.11 grams per process accordingly (column 2, line 42).

15. Claims 10-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blaise et al. (US 4,025,709) in view of Wu et al. (US 6,214,251 B1).

16. Claims 7-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blaise et al. (US 4,025,709) in view of Sharma et al. (US 6,462,109 B1), and further in view of Wu et al. (US 6,214,251 B1).

With respect to above two 103 rejections, the discussion of the disclosures of the prior art of Blasie for Claims 7-9 as well as Blaise/Sharma for Claims 7-9 of this office action are both incorporated here by reference.

Regarding **Claims 10-11**, the references of Blaise and Sharma, either in combination or alone, is silent about including the claimed potassium alkylsulphonate in the polymerization process. Wu et al. teach that in the course of making various PVDF polymers, the alkylsulfonate salt is added in polymerization process (column 5, line 22-25; column 17, line 24-30; column 18, line 43-46). By doing so, such alkylsulfonate-modified PVDF polymers are very useful in making polymer electrolyte as matrix polymer component (column 5, line 3-5; column 3, line 52-56).

In light of the fact that polymers produced by all the involved references are containing similar type of vinyl-containing monomers, which can be obtained through free radical induced emulsion polymerization and the like. Therefore, one having ordinary skill in the art would have found it obvious to **modify Blasie or Blaise/Sharma's polymerization process by adding a compound of alkylsulphonate salt** as taught by Wu. One would expect one advantage is to obtain a final PVDF latex product modified with alkylsulfonate salt. A more diversified PVDF product useful in making polymer electrolyte as the matrix polymer component can be thereby obtained.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicants' disclosure. The following references relate to polyvinylidene fluoride (PVDF) homopolymer or copolymer comprising sodium acetate, less than 300 ppm of surface-active additive, and with chain-end of $-\text{CF}_2\text{-CH}_2\text{-O-SO}_3^-$:

Art Unit: 1713

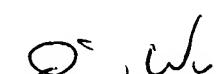
US Patent No. **6,780,935 B2** to Hedhli et al. disclose the preparation of a fluoropolymer resin containing ionic or ignitable group (title; column 9, line 21-49). Although PVDF seed latex is used as a seed for polymerization of acrylic/vinyl monomers (see Tables 1-5), no sodium acetate or alkylsulfonate is included in the course of polymerization. Therefore, Hedhli fails to teach or fairly suggest the limitation of present invention.

18. Any inquiry concerning this communication or earlier communication from the examiner should be directed to Henry S. Hu whose telephone number is (571) 272-1103. The examiner can be reached on Monday through Friday from 9:00 AM –5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached on (571) 272-1114. The fax number for the organization where this application or proceeding is assigned is (703) 872-9306 for all regular communications. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <<http://pair-direct.uspto.gov>>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Henry S. Hu

March 30, 2005



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